

G3568 Stamp Hole System on Module Introduction



Shenzhen Graperain Technology Co. Ltd.

www.graperain.com

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Version Station

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Chapter 1 G3568 System on Module Introduction

1.1 G3568 System on Module Brief

G3568 system on module is based on Rockchip RK3568 (64bit quad core) platform, which is designed by Shenzhen Graperrain Technology Co., Ltd.

G3568 system on module take Rockchip RK3568 chip, 64bits quad core CPU, frequency up to 2.0GHz. Cortex-A55 provides up to 100% performance improvement compared to the previous A15/A17 core design.

This RK3568 chip is integrated with ARM G52 2EE graphics processor. Support OpenGL ES1.1/2.0/3.2, OpenCL 2.0, Vulkan 1.1, embedded high-performance 2D acceleration hardware. More support 4K 60fps H.265/H.264/VP9 video decode, and 1080P 100fps H.265/H.264 video code, and 8M ISP and HDR, NPU 1T computing power. Such powerful GPU and NPU can be applied to many applications, such as computer vision, machine learning, 4K 3D rendering, etc.

And more interfaces, such as MIPI-CSI interface and dual MIPI-DSI, EDP, HDMI, PCIe, SATA, CAN, USB3.0, USB2.0, OTG etc.

G3568 system on module is equipped with 2GB/4GB LPDDR4 , 8GB/16GB/32GB eMMC, independent power management system, powerful network expansion capability, rich display interfaces. It supports Android11, Linux, Debian.

G3568 development board is consist with G3568 system on module and carrier board, its pin more than 208, running speed more than 2.0Hz.

G3568 development board has rich function expansion interfaces, which can effectively improve the scalability of industry customization. Such as PCIe3.0 1x2/2x1 Lane and PCIE2.1 1x1 Lane at the same time, meeting the expansion requirements of 4G/5G, wifi6, multiple network ports, NPU, etc, and 3x SATA3.0, solves various USB expanding to SATA instability problems of traditional AP processor, and up to 4 USB ports, 1xUSB3.0/USB2.0 HOST + 1xUSB3.0/USB2.0 OTG + 1xUSB2.0 HOST + 1xUSB2.0 HOST. RK3568 also supports dual Gigabit Ethernet ports to meet the multi-network port requirements of industrial control and IoT gateways.

G3568 System on Module Specification

- Best Size: 55mm x 55mm x 3mm
- RK809 Power Manage Design

- Kinds of bands eMMC support, 8GB as default
- LPDDR4, 2GB as default, 4GB customized, max 8GB
- Support power sleep and wake-up
- Android 11, Linux, Ubuntu and Debian OS
- Dual gigabit Ethernet ports

1.2 Specification Parameters

Construction Parameter	
Appearance	Stamp hole
G3568 SOM Size	55.8mm * 55.8mm
PIN Pitch	1mm
PIN Number	208PIN
Layers	8-layer

System Configuration	
CPU	RK3568
Frequency	Cortex A55 quad core, 2.0GHz
RAM	Default 2GB, 4GB customized, max 8GB
Memory	8GB/16GB/32GB eMMC
Power IC	RK809
Graph and Video Processor	ARM Mali- G52 2EE GPU OpenGL ES 1.1/2.0/3.2, OpenCL 2.0, Vulkan 1.1 Support 4K VP9 and 4K 10bits H265/264 video decode, max 60fps. 1080 Multi-format video decode 1080 video decode, supports H.264, VP8 format

Interface Parameters	
Display	MIPI interface, eDP output
Ethernet	RTL8211F, gigabit PHY
Audio	IIS/PCM interface, support RP
SD Card	2 channels SDIO output
EMMC	Onboard eMMC interface, no othe PIN OUT
Ethernet	Dual GbE Ethernet ports
USB HOST	2 channels HOST2.0, 1 channel HOST3.0
USB3.0 OTG	1 channel USB3.0
UART	10 channels serial port, supports flow control serial port
PWM	12 channels PWM output
IIC	6 channels IIC output
SPI	3 channels SPI output
ADC	5 channels ADC
Camera	1 channel MIPI input
HDMI	Hd audio and video output, Audio and video synchronous output
MIPI	1 channel MIPI RX, 2 channels MIPI TX
EDP	Yes
PCIE	Support PCIe3.0 1x2/2x1 Lane, PCIe2.1 x1
SATA	3 channels SATA3.0
CAN	3 channels CAN

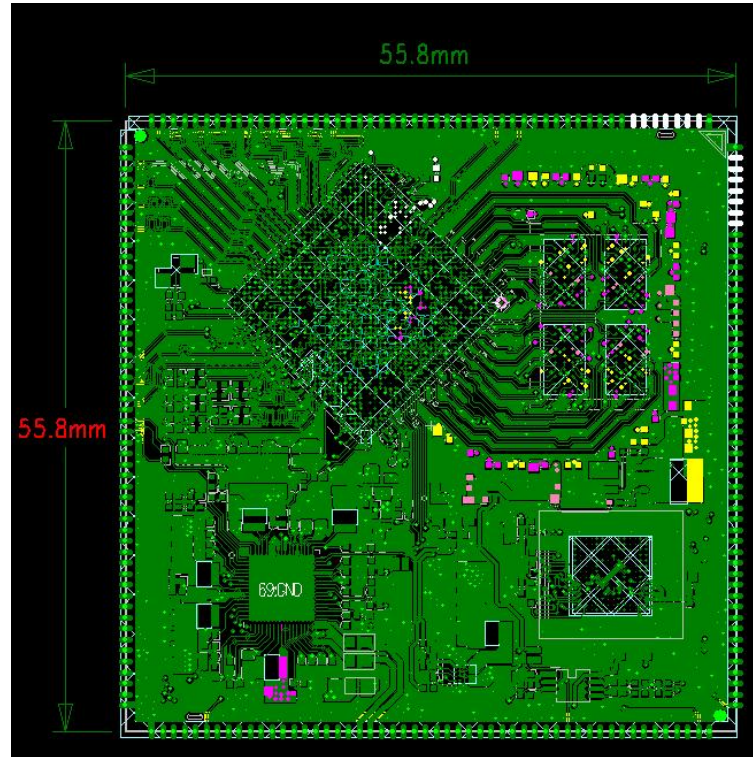
Electrical Specification	
Input Voltage	3.3V
Output Voltage	1.8V
Storage Temperature	-30~80 °C
Working Temperature	-20~70 °C

1.3 G3568 System on Module Appearance



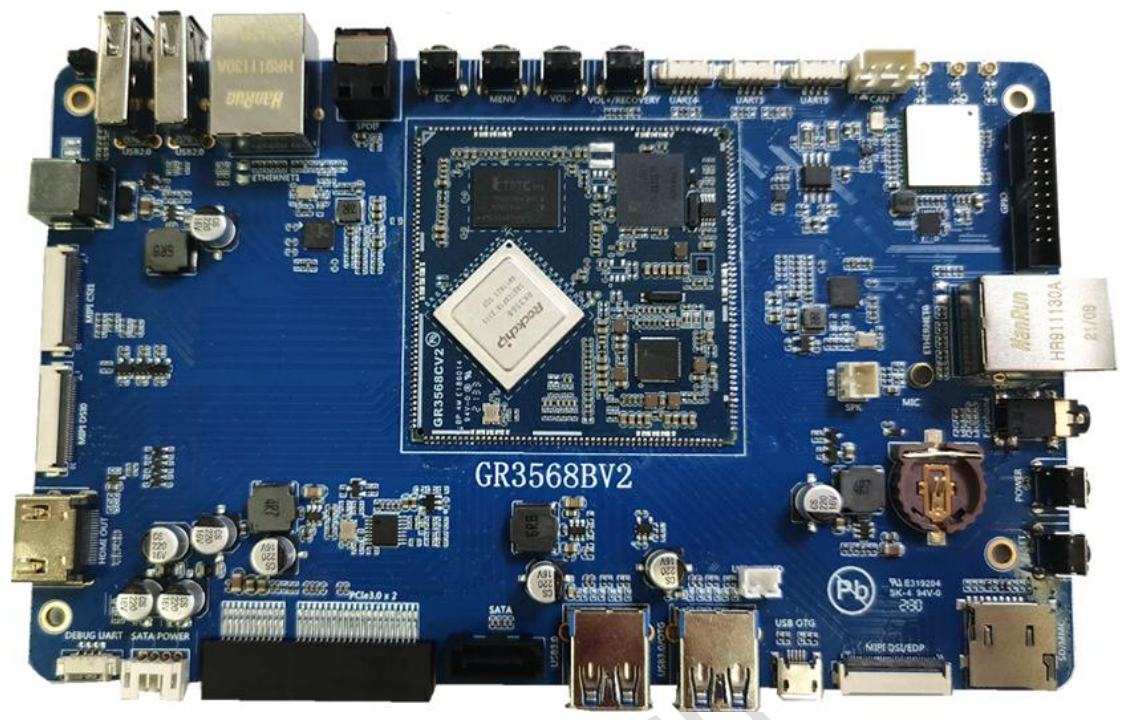
1.4 G3568 System on Module Construction Picture

G3568 system on module construction size:



1.5 G3568 Development Board Carrier Board

More information of G3568 development board, please reference G3568 development board introduction.



Front of G3568 Development Board

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Chapter 2 PIN Definition

2.1 G3568 System on Module PIN Definition 1

PIN No.	Pin Definition	IO Votage
1	GND	
2	GPIO4_A4	1.8v
3	GPIO4_A5	1.8v
4	GPIO3_D6	1.8v
5	GPIO3_D7	1.8v
6	GPIO4_A6	1.8v
7	GPIO4_A0	1.8v
8	ETH1_REFCLKO_25M_M0	3.3v
9	GPIO0_B7	3.3v
10	HDMITX_SDA	3.3v
11	HDMITX_CEC_M0	3.3v
12	HDMITX_SCL	3.3v
13	HDMI_TX_HPDIN	
14	TP_RST_L_GPIO0_B6	3.3v
15	I2C1_SDA_TP	3.3v
16	TP_INT_L_GPIO0_B5	3.3v
17	I2C1_SCL_TP	3.3v
18	USB2_HOST2_DM	
19	USB2_HOST2_DP	
20	USB2_HOST3_DM	
21	USB2_HOST3_DP	
22	PCIE30X2_PERSTN_M1	3.3v
23	PCIE30X2_CLKREQN_M1	3.3v

24	PCIE30X2_WAKEN_M1	3.3v
25	PCIE30X2_PRSENT_L_GPIO2_D7	3.3v
26	PCIECLKIC_OE_H_GPIO3_A7	3.3v

2.2 G3568 System on Module PIN Definition 2

PIN No.	Pin Definition	IO Voltage
27	UART2_TX_M0_DEBUG	3.3v
28	UART2_RX_M0_DEBUG	3.3v
29	PWM7_IR	3.3v
30	WORKING_LEDEN_H_GPIO0_C0	3.3v
31	MIPI_CSI_RX_D3P	
32	MIPI_CSI_RX_D3N	
33	MIPI_CSI_RX_D2P	
34	MIPI_CSI_RX_D2N	
35	MIPI_CSI_RX_CLK1P	
36	MIPI_CSI_RX_CLK1N	
37	MIPI_CSI_RX_CLK0P	
38	MIPI_CSI_RX_CLK0N	
39	MIPI_CSI_RX_D1P	
40	MIPI_CSI_RX_D1N	
41	MIPI_CSI_RX_D0P	
42	MIPI_CSI_RX_D0N	
43	MIPI_DSI_TX0_D3P/LVDS_TX0_D3P	
44	MIPI_DSI_TX0_D3N/LVDS_TX0_D3N	
45	MIPI_DSI_TX0_D2P/LVDS_TX0_D2P	
46	MIPI_DSI_TX0_D2N/LVDS_TX0_D2N	

47	MIPI_DSI_TX0_CLKP/LVDS_TX0_CLKP	
48	MIPI_DSI_TX0_CLKN/LVDS_TX0_CLKN	
49	MIPI_DSI_TX0_D1P/LVDS_TX0_D1P	
50	MIPI_DSI_TX0_D1N/LVDS_TX0_D1N	
51	MIPI_DSI_TX0_D0P/LVDS_TX0_D0P	
52	MIPI_DSI_TX0_D0N/LVDS_TX0_D0N	
53	REFCLK_OUT_CAM	3.3v
54	HDMI_TXCLKN_PORT	

2.3 G3568 System on Module PIN Definition 3

PIN No.	Pin Definition	IO Votage
55	HDMI_TXCLKP_PORT	
56	HDMI_TX0N_PORT	
57	HDMI_TX0P_PORT	
58	HDMI_TX1N_PORT	
59	HDMI_TX1P_PORT	
60	HDMI_TX2N_PORT	
61	HDMI_TX2P_PORT	
62	PCIE30_REFCLKN_IN	
63	PCIE30_REFCLKP_IN	
64	PCIE30_RX1N	
65	PCIE30_RX1P	
66	PCIE30_RX0N	
67	PCIE30_RX0P	
68	PCIE30_TX1N	
69	PCIE30_TX1P	
70	PCIE30_TX0N	

71	PCIE30_TX0P	
72	PCIE20_REFCLKN	
73	PCIE20_REFCLKP	
74	SATA2_RXN	
75	SATA2_RXP	
76	SATA2_TXN	
77	SATA2_TXP	
78	RESETN	3.3v
79	RK809_32KOUT_WIFI	
80	USB3_HOST1_SSTXP	
81	USB3_HOST1_SSTXN	
82	USB3_HOST1_SSRXP	

2.4 G3568 System on Module PIN Definition 4

PIN No.	Pin Definition	IO Votage
83	USB3_HOST1_SSRXN	
84	USB3_OTG0_SSTXP	
85	USB3_OTG0_SSTXN	
86	USB3_OTG0_SSRXP	
87	USB3_OTG0_SSRXN	
88	USB3_OTG0_DM	
89	USB3_OTG0_DP	
90	USB3_HOST1_DM	
91	USB3_HOST1_DP	
92	USB3_OTG0_VBUSDET	
93	USB3_OTG0_ID	
94	DSI_TX1_D3N/EDP_TX_D3N	

95	DSI_TX1_D3P/EDP_TX_D3P	
96	DSI_TX1_D2N/EDP_TX_D2N	
97	DSI_TX1_D2P/EDP_TX_D2P	
98	DSI_TX1_D1N/EDP_TX_D1N	
99	DSI_TX1_D1P/EDP_TX_D1P	
100	DSI_TX1_D0N/EDP_TX_D0N	
101	DSI_TX1_D0P/EDP_TX_D0P	
102	DSI_TX1_CLKN/EDP_TX_AUXN	
103	DSI_TX1_CLKP/EDP_TX_AUXP	
104	GND	
105	GND	
106	VCC3V3_SYS	
107	VCC3V3_SYS	
108	SDMMC0_DET_L	3.3v
109	SDMMC0_D3	3.3v
110	SDMMC0_D2	3.3v

2.5 G3568 System on Module PIN Definition 5

PIN No.	Pin Definition	IO Votage
111	SDMMC0_D1	3.3v
112	SDMMC0_D0	3.3v
113	SDMMC0_CMD/CAN0_TX_M1	3.3v
114	SDMMC0_CLK/CAN0_RX_M1	3.3v
115	EXT_EN	
116	GPIO0_A7	3.3v
117	GPIO0_D4	1.8v
118	GPIO0_C3	3.3v

119	SARADC_VIN0_KEY/RECOVERY	0v-1.8v
120	SARADC_VIN1	0v-1.8v
121	RK809_PWRON	
122	HPR_OUT	
123	HPL_OUT	
124	SPKP_OUT	
125	SPKN_OUT	
126	MIC1_INP	
127	MIC1_INN	
128	VCC_RTC	
129	GMAC0_RXCLK	1.8v
130	GMAC0_RXD0	1.8v
131	GMAC0_RXD1	1.8v
132	GMAC0_RXD2	1.8v
133	GMAC0_RXD3	1.8v
134	GMAC0_RXDV_CRS	1.8v
135	GMAC0_TXEN	1.8v
136	GMAC0_TXD0	1.8v
137	GMAC0_TXD1	1.8v
138	GMAC0_TXD2	1.8v

2.6 G3568 System on Module PIN Definition 6

PIN No.	Pin Definition	IO Votage
139	GMAC0_TXD3	1.8v
140	GMAC0_TXCLK	1.8v
141	UART8_RX_M0	1.8v
142	UART8_TX_M0	1.8v

143	UART8_RTSN_M0	1.8v
144	UART8_CTSN_M0	1.8v
145	GMAC0_MDC	1.8v
146	GMAC0_MCLKINOUT	1.8v
147	GMAC0_MDIO	1.8v
148	ETH0_REFCLKO_25M	1.8v
149	I2C3_SCL_M0	3.3v
150	I2C3_SDA_M0	3.3v
151	GMAC1_INT/PMEB_GPIO2_D0	3.3v
152	GMAC1_RSTN_GPIO2_D1	3.3v
153	GMAC0_INT/PMEB_GPIO2_D2	3.3v
154	GMAC0_RSTN_GPIO2_D3	3.3v
155	GPIO1_A4	3.3v
156	GPIO0_A5	3.3v
157	GPIO0_A6	3.3v
158	GPIO0_C1	3.3v
159	GPIO4_C6	3.3v
160	GPIO4_C5	3.3v
161	GPIO4_C4	3.3v
162	GPIO4_C3	3.3v
163	GPIO4_C2	3.3v
164	UART3_TX_M1	3.3v
165	UART3_RX_M1	3.3v
166	GPIO3_D5	1.8v

2.4 G3568 System on Module PIN Definition 7

PIN No.	Pin Definition	IO Votage
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167	GPIO3_D4	1.8v
168	GPIO3_D3	1.8v
169	GPIO3_D2	1.8v
170	GPIO3_D1	1.8v
171	GPIO3_D0	1.8v
172	SPDIF_TX_M1	3.3v
173	GPIO3_C7	1.8v
174	GPIO3_C6	1.8v
175	GPIO3_C4	3.3v
176	GPIO3_C3	3.3v
177	HP_DET_L_GPIO3_C2	3.3v
178	GSENSOR_INT_L_GPIO3_C1	3.3v
179	BT_WAKE_HOST_H_GPIO3_A1	3.3v
180	HOST_WAKE_BT_H_GPIO3_A2	3.3v
181	BT_REG_ON_H_GPIO3_A0	3.3v
182	GPIO3_B6	3.3v
183	GPIO3_B5	3.3v
184	UART4_TX_M1	3.3v
185	UART4_RX_M1	3.3v
186	I2S3_SDI_M0	3.3v
187	I2S3_LRCK_M0	3.3v
188	I2S3_SCLK_M0	3.3v
189	I2S3_SDO_M0	3.3v
190	GPIO4_C0	1.8v
191	GPIO4_C1	1.8v
192	GPIO4_B7	1.8v
193	GPIO4_B6	1.8v
194	GPIO4_B5	1.8v

2.8 G3568 System on Module PIN Definition 8

PIN No.	Pin Definition	IO Votage
195	GPIO4_B4	1.8v
196	GPIO4_B3	1.8v
197	GPIO0_C5	3.3v
198	GPIO0_C4	3.3v
199	GPIO0_C2	3.3v
200	GPIO0_C7	3.3v
201	GPIO4_A3	1.8v
202	GPIO4_A2	1.8v
203	GPIO4_A1	1.8v
204	GPIO4_B0	1.8v
205	GPIO4_A7	1.8v
206	GPIO4_B1	1.8v
207	GPIO4_B2	1.8v
208	GND	

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Chapter 3 Hardware Design

3.1 Design Reference

Take G3568 system on module design hardware will refer to power, USB3.0, HDMI, eDP, Mipi, audio, Ethernet(Ethernet, WIFI, Bluetooth), camera, PCIE, SATA, CAN design etc.. For these designs, please reference G3568 development board design.

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Chapter 4 Product Portfolio

4.1 System on Module Series

G4418 System on Module (Samsung 4418)

G6818 System on Module (Samsung 6818)

G3288 System on Module(Rockchip RK3288Stamp Hole Version)

GR3288 System on Module(Rockchip RK3288 Gold Finger Version)

G3399 System on Module (Rockchip RK3399 Stamp Hole Version)

GR3399 System on Module (Rockchip RK3399 Gold Finger Version)

G3568 System on Module (Rockchip RK3568)

G30 System on Module (Rockchip RX30)

4.2 Development Board Series

G4418 Development Board (Samsung 4418)

G6818 Development Board (Samsung 6618)

G3288 Development Board (Rockchip RK3288)

GR3288 Development Board (Rockchip RK3288)

G3399 Development Board (Rockchip RK3399 Stamp Hole Version)

GR3399 Development Board (Rockchip RK3399 Gold Finger Version)

G3568 Development Board (Rockchip RK3568)

G30 Development Board (Rockchip RX30)

4.3 Single Board Computer Series

G4418 Single Board Computer (Samsung 4418)

G6818 Single Board Computer (Samsung 6818)

Instructions:

More information of specifications and other products, please pay attention to website.

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